

CLAIMS

1. A p channel field effect transistor in which a liquid electrolyte is used as a gate, and a polycrystalline or monocrystalline diamond surface having mixed hydrogen terminals, oxygen terminals, and amino terminals serves as a channel.

2. A sensor characterized by including the p channel field effect transistor according to Claim 1 and exhibiting a pH sensitivity through the use of a shift of threshold voltage in the positive direction on the surface having mixed amino terminals and oxygen terminals in response to an increase in pH of the liquid electrolyte.

3. The sensor according to Claim 2, characterized in that the increase in pH is 2 to 12.

4. The sensor according to Claim 2 or Claim 3, characterized in that urease is immobilized to the amino terminal on the surface with glutaraldehyde (divalent aldehyde) therebetween, the threshold voltage shifts in the positive direction in response to an increase in urea concentration and, thereby, the sensitivity to urea is exhibited.

5. The sensor according to Claim 4, characterized in that the increase in urea concentration is  $10^{-6}$  M to  $10^{-2}$  M.